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HOW WINNERS WIN
LESSONS LEARNED FROM CONTRACT
COMPETITIONS IN BASE OPERATIONS SUPPORT

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Executive Summary

HOW WINNERS WIN

LESSONS LEARNED FROM CONTRACT COMPETITIONS IN BASE OPERATIONS SUPPORT

↳ Competition in Base Operations Support (BOS) produces savings for the ~~Department of Defense~~ ^{DoD}. In the face of competition, costs drop by an average of 27⁹/₁₀₀ percent whether a contractor or the in-house work force wins. If we knew how winners realized those savings, they ^{might} ~~could perhaps~~ be duplicated by in-house Government activities even when competition isn't possible.

Winners of competed BOS functions follow many common approaches to increase their productivity. For family housing maintenance and audiovisual services, these approaches include:

- organizational changes, simplifying organizations to reduce the number of supervisors;
- consolidation of working locations to eliminate the expense of supervising dispersed activities;
- use of working supervisors who not only direct and schedule workers but also perform direct labor themselves;
- use of multiskilled workers to reduce periodic backlogs with a smaller work force;
- use of lower-skilled workers, reserving higher skilled employees for jobs that suit their talents;
- provision of equipment, vehicles, and communications to maximize worker productivity;
- establishment of worker goals and accountability to motivate employees;
- provision of computer support to complete work more quickly and accurately; and
- elimination of unnecessary work, abolishing or modifying nonessential tasks.

These approaches appear to be unique to activities that have undergone competition, and we observed them in most of the 14 winning activities we visited. Contractor winners are even more frugal than in-house winners; they rely heavily on overtime, part-time labor, simplified supply procedures, and responsive vehicle and equipment maintenance to further improve productivity. They also tend to pay lower wages to BOS workers than does DoD, and they are quicker to hire and fire employees.

Activities whose functions have not been competed or are exempt from competition could use many of the approaches we observed. We recommend that OSD:

- establish a clear goal of winning Commercial Activities (CA) competitions with its in-house work force and encourage broad application of the CA program to as many BOS activities as possible;
- disseminate the ideas we observed through the Efficiency Review Program;
- make our findings available to installation commanders participating in DoD's Model Installations Program.

We further recommend that the Military Services:

- examine contractor-specific approaches for their applicability to all in-house activities;
- provide in-house winners with as much budget stability as possible;
- ensure, through a formal arrangement, that equipment and vehicle resources will be available to an in-house work force before declaring it a competition winner.

Competition is the incentive that produced the changes we observed. It will be more difficult to produce savings without the pressure of competition, but through wide dissemination of lessons learned, a sizable increase in BOS productivity is possible.

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1. STUDY BACKGROUND AND RECOMMENDATIONS

BACKGROUND

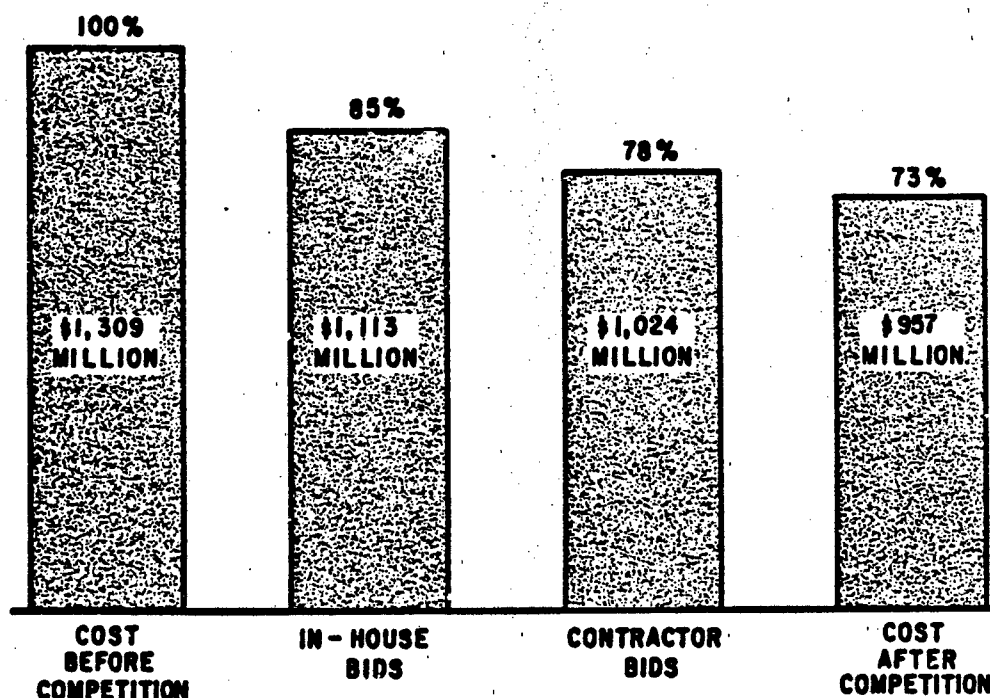
For many years, the Department of Defense (DoD) has engaged both in-house employees and private contractors to provide Base Operations Support (BOS) services at military installations. BOS includes such activities as family housing, real property maintenance, civilian personnel administration, vehicle maintenance, food service, supply, contracting, security and law enforcement, and others; in short, the support services necessary to accomplish the installations' missions. Until 1979, in-house activities could expect a long-term existence in relative security, but after the Office of Management and Budget revised its Circular A-76 in that year, the Military Services were required to make periodic reviews to determine whether in-house activities could be accomplished more economically by contract.¹ If a contractor's cost resulted in savings of at least ten percent of the in-house personnel costs, the activity was to be contracted. This revolutionary change in the way the Government did business introduced competition for the first time to many in-house activities that had never felt any externally applied pressure to be cost-efficient.

In DoD, commercial activities (CA) cost comparisons in the BOS area show that substantial savings result whether the in-house activity or a private contractor wins the competition. Between February 1979 and December 1983, 921 BOS competitions had taken place affecting approximately 24,000 jobs. As shown in Figure 1-1, the cumulative annual operating cost for the competed

¹U.S. Office of Management and Budget, "Policies for Acquiring Commercial or Industrial Products and Services Needed by the Government," OMB Circular A-76 (Revised), March 19, 1979.

activities had been \$1.3 billion but was reduced 15 percent on average by in-house activities when they bid to satisfy the Performance Work Statement (PWS) with their most efficient organizations. Contractors' bids were 22 percent lower on average, even when Government supervision and administration costs were added to them. Despite the difference in average costs between in-house and contract bids, 48 percent of the competitions were won by the in-house activities, and the total annual cost of the 921 activities after competition was \$957 million, a 27 percent reduction as a result of competition.

FIGURE 1-1. THE ADVANTAGE OF COMPETITION



The Deputy Assistant Secretary of Defense (Manpower, Installations and Logistics) tasked LMI to determine how these savings had been attained. By analyzing both contracted BOS activities and in-house winners of CA competitions, we were to recommend how the factors that led to reductions in operating costs could be transferred to activities that had either not yet been

competed or were exempt from CA competition. Following discussions with the Services, the study focused on two functions, audiovisual services and family housing maintenance. After visiting 14 winning activities, we conclude that winners won by aggressively altering the way they do business, tailoring their workforce, organizations, and procedures to their local needs. They become sensitive to, and thoroughly familiar with the costs of their operations. We find several factors common to all winners and some that are unique to contractor operations; all of them are described in Chapter 2, "How Winner's Win."

Determining what the winners do differently than their in-house peers who have never faced competition is much less difficult than finding ways to transfer such practices to those in-house activities. The most obvious incentive for reducing operating expenses is the threat of losing the competitions, the very personal fear of losing jobs. Every activity manager we visited believed strongly that without such motivation, business as usual would have prevailed and the innovations that we observed would probably never have occurred. At one installation at which an activity had been scheduled for competition, a "Most Efficient Organization" (MEO) had been planned in detail, but when the competition was cancelled and the activity exempted from future competition, the MEO was shelved. The threat of competition was the only stimulus that produced savings.

How, then, can noncompeted activities be encouraged to try the new ideas suggested here? We recommend a three-pronged approach by OSD that involves:

- encouraging additional CA competition and establishing a clear goal of winning with the in-house work force;
- disseminating through the Efficiency Review Program information from Chapter 2 of this report on how the winners have organized their work forces and altered their procedures;

- disseminating the same information to installation commanders in the Model Installations Program.

RECOMMENDATIONS

We recommend that OSD encourage additional CA competitions and, more importantly, that it establish a clear goal of winning those competitions with the in-house work force. We suggest that OSD set a goal for in-house wins of 75 percent of all BOS competitions (versus the 48 percent winning rate in the 921 competitions we sampled) and that the Services be tasked to reevaluate the exempted status of those activities they have excluded from CA competition.

Since competition is the most effective means of promoting the types of economies we observed, it should be encouraged. With over half the CA competitions to date in BOS having been lost by in-house activities, the entire CA program has acquired a negative reputation. The Services have exempted more activities from competition than OSD would like, and we observed a very prevalent tendency on the part of activities that were scheduled to compete to postpone preparing for competition as if hoping that the threat would pass. As a result, activity managers often lose valuable time they need to acquire productivity-enhancing equipment and they find themselves reacting hastily to deadlines rather than executing a well-planned efficiency review. If the Services were encouraged to be more positive about the CA program, prompting earlier preparations by in-service activities and prevailing upon them to win, it is likely that competition would be even more aggressive and would produce greater cost savings than are now being experienced. Encouraging in-house wins should also foster a greater exchange of lessons learned between activities that have undergone competition and those preparing for it. Activity managers had an almost universal complaint that they were left to fend for themselves without benefit of lessons learned from others who had also faced

competition with contractors, and all said that in hindsight they would have prepared their bid differently knowing what they know now.

Our second recommendation is that the ideas presented in Chapter 2 be disseminated to activities exempted from competition through the Efficiency Review Program. That DoD-wide program is intended to duplicate the efficiency reviews that in-house activities conduct prior to CA competition for activities that are exempt from such competition. It requires preparing an in-house PWS, pricing out the PWS tasks in terms of manhours, materiel, and equipment, and formulating an effective mix of staffing patterns (full- and part-time personnel) and support resources to accomplish the PWS efficiently.² Key concepts presented in Chapter 2 should be considered in preparing the PWS, staffing patterns, and support resources during efficiency reviews. They should, therefore, be disseminated to responsible action offices by OSD.

Our third recommendation is that the ideas on how winners win be made available to installation commanders who participate in the Model Installations Program, a program that allows commanders of designated "Model Installations" to try new ideas and use any savings from their new ideas to improve facilities and service to their people.³ We feel that the experiences of winners of contract competitions in BOS have proved that savings result from implementation of the ideas in Chapter 2, that such experience appears to be applicable to BOS activities at other installations, and that OSD should make it available to Commanders of Model Installations.

We do not recommend that any BOS activity in any of the Military Services be directed to use these ideas. Past experience has shown that little

²Office of the Assistant Secretary of Defense (Manpower, Reserve Affairs and Logistics), "Performance Requirements and Efficiency Reviews -- Action Memorandum," 21 October 1982.

³Department of Defense, "1983 Annual Report of the Deputy Assistant Secretary of Defense, Installations," February 14, 1984.

improvement in efficiency results from directed changes of this type unless the activity managers and installation commanders are fully committed to the ideas. The best way to obtain such commitment is to demonstrate to them that the ideas work in actual practice in activities similar to theirs. Even then, it will take exceptional motivation and acumen for an activity manager to make extreme changes in the way he does business without the pressure of competition and the resultant drive toward self-preservation.

We have made additional recommendations for the Military Services in Chapter 3.

2. HOW WINNERS WIN

Winners win by being innovative, by familiarizing themselves thoroughly with their responsibilities, and by structuring their activities to meet those responsibilities as cost-effectively as possible. They change standard procedures and standard organizations where logic dictates that changes will reduce costs.

Our study concentrated primarily on audiovisual services and family housing maintenance (how these activities were selected is discussed in Appendix C), and we visited eight installations to observe 11 activities in detail. We also visited three total base maintenance contractors early in the study at the Navy Submarine Base, Bangor, Washington; Hawthorne Army Ammunition Plant (AAP); and Vance Air Force Base (AFB). Although only at Hawthorne AAP was base maintenance converted to contract as a result of a commercial activities competition under OMB Circular A-76, contracts had been recompeted in 1982 at the other two bases, and it was quite evident that the pressure of competition had been experienced by all three contractors. The installations and activities visited are shown in Table 2-1.

We observed many changes that these 14 activities made to help win their competitions and found that many approaches were common to in-house and contract winners. Those common approaches included:

- organizational changes;
- consolidation of working areas;
- use of working supervisors;
- use of multiskilled workers;
- use of lower-skilled workers;

- provision of equipment, vehicles, and communications;
- establishment of worker goals and accountability;
- provision of computer support;
- elimination of unnecessary work.

TABLE 2-1. INSTALLATIONS VISITED AND ACTIVITIES COMPETED

INSTALLATION VISITED	ACTIVITY COMPETED	WINNER	
		IN-HOUSE	CONTRACTOR
Keesler AFB	Audiovisual Services	X	
	Family Housing Maintenance		X
Hill AFB	Audiovisual Services	X	
	Family Housing Maintenance		X
PWC Pensacola	Family Housing Maintenance	X	
	Vehicle Maintenance	X	
Fort Jackson	Audiovisual Services	X	
Cherry Point MCAS	Family Housing Maintenance	X	
Camp Lejeune	Family Housing Maintenance	X	
Fort Sheridan	Audiovisual Services	X	
Offutt AFB	Family Housing Maintenance	X	
Submarine Base, Bangor	Total Base Maintenance		X
Hawthorne AAP	Total Base Maintenance		X
Vance AFB	Total Base Maintenance		X

We also found several approaches commonly used by contractors but not by in-house winners. The following sections discuss each of the approaches common to the winners and those common to contract winners only.

ORGANIZATIONAL CHANGES

As a result of competition, organizational changes have been made at many of the activities visited. It is apparent that competition forces managers to examine their organizational structure rigorously to determine areas in which changes might permit reductions in the number of employees, especially costly

supervisors, or in which a modified organizational structure might allow the activity to tailor its form to fit local needs better. The most innovative reorganization we saw was at Vance Air Force Base where the contractor has made substantial changes to "fine tune" the operation; organizational changes were also noted during visits to several other installations.

At Vance Air Force Base, the winning contractor, Northrop Worldwide Aircraft Services, Inc., has very boldly reorganized its support activities to take advantage of characteristics peculiar to that base. It frequently organizes around facilities it occupies or around key employees so that it can use these assets to their best advantage. By combining three separate functions -- supply, transportation, and procurement -- as branches of a department it calls STP, Northrop experienced very favorable results. Because they are located in the same building, the procurement and supply branches have been able to streamline the materials-receiving process, allowing item discrepancies to be detected very early. The Procurement Office has its own terminal for the supply computer and routinely queries the system for the status of orders without inconveniencing a supply specialist. The proximity (both physically and organizationally) of supply and transportation greatly speeds the repair of supply's materials-handling equipment (it is sometimes even repaired in the warehouse) and allows transportation's vehicle maintenance supervisor to obtain parts more quickly. Since they all work in the same department, the various components of STP have less need for interfacers to communicate the needs of one organization to another. Additional or collateral duty positions such as vehicle control officer and supply account managers, common in Air Force support activities and requiring training of people from outside those fields, are centralized within STP under the branch most familiar with the requirements of the job.

Since STP has warehouse space and stock control skills, Northrop's management decided to include forms and publications distribution under its Supply Branch. By doing so, it has vastly reduced the handling of these items and removed from Base Administration a very cumbersome responsibility. Other STP organizational changes include the placement of the Packing and Crating Section under the Supply Branch (rather than under the Transportation Branch), since supply is its most identifiable user. The transportation officer and vehicle maintenance superintendent's responsibilities were combined into one organizational block around a capable manager to maximize the use of his skills. A forward supply warehouse has been opened on the flightline, taking advantage of an available facility.

Northrop has also made other organizational changes at Vance Air Force Base. In the Civil Engineering Division, several staff functions, such as administration, training, financial management, and real estate management, have been made a part of the Industrial Engineering Branch. Instead of four or five work force superintendents, the Operations Branch has none, grouping all of its shops under two foremen and designating "working leadmen" for most shops. Even at the shop level, Northrop has combined similar functions; for example, the structures leadman oversees both the structures and metal shops. Vance Air Force Base has no Deputy Base Civil Engineer; a branch chief is designated as the Division Chief's substitute in his absence.

This streamlined organization has eliminated many supervisors, but Northrop maintains that it has not hurt its capabilities and has vastly streamlined its work flow and response times.

We saw organizational changes in the family housing maintenance and audiovisual services activities we visited also. At the Public Works Center (PWC), Pensacola, Cherry Point Marine Corps Air Station (MCAS), and

Camp Lejeune, family housing maintenance responsibilities had been shared by the base maintenance shops before CA competitions. Although some employees worked practically full-time on housing maintenance, they were assigned to shops that maintained more than just housing. The need to compete family housing maintenance as a package effectively forced managers to create a separate organizational block in which to group such workers. When combined with the use of multiskilled workers and lower grade levels, the separate shop produced less organizational friction than we saw at one location that had not reorganized. Offutt Air Force Base has a Family Housing Maintenance Shop, but it is very small and is dedicated primarily to renovating units between occupants; the other Civil Engineering shops do most of the repair work. Because housing maintenance responsibilities are so fragmented, it is entirely possible for two separate crews to be sent to the same housing unit at the same time on similar jobs. Furthermore, some of the workers in the Family Housing Maintenance Shop are discontent with doing work similar to that done by higher-graded specialists from Civil Engineering's other shops.

While organizational changes in family housing management generally consisted of the establishment of a separate Housing Shop, in audiovisual services we saw a variety of organizational changes. At Fort Jackson, the Training Devices and Graphics Sections have been combined into a single section, allowing the elimination of one GS-11 supervisor's position. Keesler Air Force Base has decentralized its work processing responsibilities, allowing sections (and even individuals) to do their own scheduling and eliminating a block on their organizational chart. Hill Air Force Base is now in the process of combining its film library and administrative sections.

The key to these organizational changes is that competition forces managers to be more flexible and to tailor their organizations to local needs,

local facilities, and even local personnel. Gone is the tendency to follow a common organizational chart simply because it conforms to a standard when an activity's very survival depends on its operational efficiency.

CONSOLIDATED WORK LOCATIONS

Military installations frequently have two or more housing maintenance shop locations because housing is often dispersed over large areas. One shop generally serves as the central site, while the others are more limited in scope and are considered satellite shops. Satellites are stocked with their own parts and supplies, their own sets of shop tools and equipment, and their own staff, usually including a supervisor. Since shops of that kind are separate operating units requiring the same types of support as the central shop, savings can be realized in several different ways through consolidation. First, satellites are generally staffed all year for their average peak work load. Merging the satellite work force with the main shop gives managers a broader pool of workers to assign to tasks and can enable the shop to operate with fewer total authorized spaces. Second, a merger can free the satellite foremen of supervisory responsibilities, allow them to return to workman status, and eliminate supervisory positions with savings for the organization. Third, since supplies no longer need to be stocked in multiple locations, savings can be realized from lower total stockage levels.

After analyzing the cost of operating satellite shops, several of the installations we visited decided during competition that the added convenience of multiple locations was not cost-justifiable, particularly if one or more supervisory positions could be eliminated through consolidation. Both the contractor at Hill Air Force Base and the in-house operation at Camp Lejeune have achieved efficiencies by closing satellite shops. Before competition, Camp Lejeune operated a central trade shop and several emergency service shops

dispersed around the installation. They closed several satellite shops but, because of the unusually large size of the base, could not justify closing all. At Hill AFB, two shops had served housing areas on opposite ends of the base. Despite the 3-mile distance between areas, the contractor closed one of the shops and has been operating with a single shop for the past 5 years.

Satellite shops are usually established because of widely scattered housing areas, so a consolidated location cannot be considered unless workers have radio (or beeper) contact with supervisors and have adequate transportation to move from one job site to another. This communication enables the supervisor to assign tasks to the work force on a real-time basis regardless of the distance from the shop, and it facilitates the coordination and delegation of tasks. Each worker at the family housing maintenance shops at Hill AFB and Camp Lejeune has a radio and a dedicated vehicle.

The location of audiovisual shops has also been consolidated by some audiovisual winners. Before CA competition at Keesler Air Force Base, for example, five or six separate graphics shops were located throughout the base. Each was near a customer organization, served that organization's needs, and as with the satellite shops in family housing maintenance, required its own people and equipment, with little interchange between shops. Since the workload for each shop was extremely variable, one office might be overloaded while another was in a slack period. Since CA competition at Keesler AFB, all graphics work has been merged to a single location and the number of employees has been reduced from 45 to 23. The level of service to customers remains high.

Consolidation has been an effective means for reducing operating costs at many installations but should be used only if the level of customer service

can be substantially maintained. Otherwise, the change would be counterproductive and should not be considered.

WORKING SUPERVISORS

Hand in hand with organizational changes, we found the use of working supervisors to be prevalent among winners. Again, the most visible examples were in base maintenance at Vance Air Force Base where Northrop has eliminated shop foremen in the Civil Engineering Division and substituted "working leadmen" whom they consider technical supervisors. Leadmen do not concern themselves with performance ratings, employee counseling, and the like, all of which are the responsibility of a supervisor higher in the organizational structure. Northrop claims that much of the time other organizations spend supervising is not entirely necessary and that a good supervisor has the potential for a far greater span of control than standard military organizational doctrine acknowledges. It is unnecessary, in Northrop's view, to have the number of supervisors normally found within a typical Air Force civil engineering organization. The working leadmen charge much of their time to direct labor and seem quite satisfied that their years of experience in a craft have not resulted in a supervisory desk job, a fate they consider less than palatable.

There are many other examples of working supervisors at Vance Air Force Base, such as the vehicle operations leadman who does a considerable amount of driving himself. The other base maintenance contractors visited also depend on working supervisors, having formally designated jobs as leadmen, working leaders, or the like.

In family housing maintenance and audiovisual services, supervisors were also expected to perform direct work, but the designation of working supervisors was somewhat less formal. Instead of reclassifying positions as

working leaders, the in-house winners often eliminated supervisory positions in preparation for competition, and the work that they used to provide has simply shifted elsewhere within the organization. Usually the formal supervisory responsibilities (employee selection, evaluation, counseling, etc.) have moved higher in the organization, while the technical supervision (quality control, work scheduling, etc.) has moved down. These changes have effectively increased the span of control of designated supervisors and have, where properly communicated to workers, made the work force more cognizant of the fact that it must police itself. Workers are more responsible than they once were to assure that the quality of their work meets standards.

MULTISKILLED WORKERS

Both contractors and in-house winners rely on multiskilled workers to help them satisfy periodic changes in work load. They also find that this approach increases the productivity of workers whose jobs have extensive amounts of slack time. Many of the illustrative examples came from the total base maintenance contractors visited early in the study.

At the Navy Submarine Base, Bangor, for example, the contractor, Pan American World Services, Inc., operates 29 buses and yet has only 15 full-time drivers. When more than 15 buses are needed, grounds maintenance workers (each of whom has been trained and licensed to operate buses) are temporarily assigned as drivers. Pan American enthusiastically endorses the concept of multiskilled workers and emphasizes cross-training of employees as its highest priority during slack periods. A multiskilled roving patrol is used to operate boilers and air-conditioning systems, eliminating the need for separate patrols from each trade. The company's nonunion work force allows Pan American a great deal more latitude in designating multiskilled positions than other total base maintenance contractors visited.

At Vance AFB, Northrop has combined its pavements and heavy equipment operations sections into a single shop, cross-training employees in both fields. Since pavements workers are licensed to operate all types of heavy equipment, much of the time that was once lost waiting for an equipment operator is now spent productively. A single electrical shop maintains both interior and exterior electrical systems as well as auxiliary power generators. Two general-purpose maintenance mechanics are dedicated to family housing maintenance and repair, and they perform handyman work ranging from simple carpentry and painting through electrical and mechanical work. Northrop frequently uses multiskilled positions to keep workers productive during slack periods. For example, the night clerk at the base billeting desk performs necessary accounting and auditing work, the maid service supervisor assists the billeting clerk during the day, Civil Engineering Division work force controllers double as service call clerks, and the night controller keeps busy by updating labor accounting records. Multiple skills also prevent Northrop's organization from becoming too dependent on a single individual. Two employees staff the Family Housing Management Office, and both of them double as assignment clerks and inspectors for Vance Air Force Base's 220 housing units. Procurement buyers handle an order from start to finish, remaining proficient in all aspects of purchasing rather than merely in one small facet. The company claims that this diversity of skills allows it to continue operating much more smoothly whenever key workers are absent.

Northrop's use of multiskilled workers is not as widespread as it was before the company's employees organized in 1976. Since then, it has experienced union resistance, for example, to its policy of covering all nighttime emergencies in Civil Engineering (no matter what trade is called for) with a standby electrician or refrigeration mechanic; it is, however, continuing the practice.

In the audiovisual and family housing maintenance fields, commercial activities competition winners also use multiskilled workers. General-purpose maintenance mechanics, similar to those at Vance AFB, were used extensively by all six of the contractors and in-house family housing maintenance winners visited. When coupled with other productivity-enhancing ideas, such as dedicated and stocked vehicles and radio communications, the use of multi-skilled workers allows maintenance managers to complete more service calls while sending fewer workers to houses and completing more tasks per trip than would otherwise be possible. Multiskilled workers allow reductions in the number of supervisors since organizational grouping by trades is no longer necessary. Before competition, the 23-person Family Housing Maintenance Shop at Keesler Air Force Base had five supervisors to oversee individual trades. The contractor now has 19 employees but only one supervisor. Keesler's Manpower Office views the failure of the in-house competitor to consider multi-skilled workers as the main reason for the loss of the competition to a contractor. In-house winners placed greater dependence on multiskilled workers after their CA competitions.

In the audiovisual field, the use of multiskilled workers is somewhat less prevalent although still notably expanded as a result of competition. Photographers frequently do both developing and printing, but that approach is not uncommon in activities that have not experienced competition. What we did find unique is that at Fort Sheridan photographers are tasked to do computer graphics when work loads dictate, and they have adapted well to this new endeavor. Managers of the graphics section at Keesler AFB have engaged in a tremendous push away from specialization and told us that multiskilled illustrators can not only be moved from specialty to specialty when work loads change, but that by rotating an employee between specialties, managers can

more easily see where employees excel. The employees develop a broad skill base and are more interested in remaining with the organization since they are better qualified for job progression than they would be if they specialized.

Multiskilled workers allow management the flexibility it needs to keep an austere work force at peak productivity.

LOWER SKILL LEVEL

Many installations visited were able to reduce their operating costs by lowering the average skill level of their work force without lowering the level of service provided to the customer. In most instances, this action was taken after in-house management engineers had conducted a thorough analysis of the work performed and determined that some positions were graded at a higher level than required.

Before competition at PWC Pensacola, for example, all mechanics in the light vehicle transportation shop were graded as WG10s. An analysis of their work load revealed that WG10-level experience was needed only for major overhaul jobs; replacement of parts and tire repairs could easily be handled by WG6s and WG5s. Consequently, all but two positions were downgraded.

Similarly, tradesman positions in family housing maintenance at Pensacola were typically classified at the WG8 level. In preparing for competition, the PWC determined that 85 percent of the work could be performed by a WG7 or lower. Consequently, all positions except one air conditioning maintenance position were downgraded. At Cherry Point MCAS and Camp Lejeune, the skill level of many family housing maintenance positions was lowered from a journeyman to maintenance mechanic or helper, and at Keesler Air Force Base, several positions in the photo lab were lowered from the GS-7 to the GS-5 level.

The use of lower skill levels not only creates cost savings for the organization but also provides employees with career progression incentive

within the organization. For example, when all mechanics in the transportation shop at Pensacola were graded as WG10, there was little competition for career growth and advancement. With the new WG5 and WG6 positions, individuals can start as helpers and, as they demonstrate that their skills increase, can advance to the level of skilled mechanic. This provides a new employee with the opportunity to start at a semiskilled level and progress within a specialty without having to leave the organization. These lower positions are not trainee positions, but they do give lower-skill workers chances to learn their trades and to advance their careers within a single organization.

In the past, the BOS work force has been structured and graded so as to have the most qualified worker available for the job. This approach is being recognized as a luxury that an activity simply cannot afford in the face of competition. The newer practice of assigning a job to a qualified worker in the lowest possible grade is more aligned with the spirit fostered by CA cost competitiveness.

EQUIPMENT, VEHICLES, COMMUNICATIONS

Commercial activities competition winners are acutely aware of the value of a worker. Labor costs are the predominant part of either a contractor or an in-house winner's total operating budget, and managers devote a significant portion of their efforts to making sure that they get the most out of every worker. They consider their workers as major investments, and do not hesitate to make further, smaller investments that will amortize themselves in improved worker productivity. We found that competition forces managers to search more actively for such investments and creates a heightened sense of urgency to acquire productivity-enhancing assets quickly. Particularly noteworthy is the fact that in-house winners appear to be even more aggressive in the acquisition of such assets than contractors.

At Camp Lejeune, the family housing maintenance operation has been vastly streamlined by communications and vehicle acquisitions. When a trouble call is received in the Family Housing Office, a job ticket is written at the trouble desk and is simultaneously transmitted to an automated ticket-writer in the Maintenance Shop. There, it is received by a dispatcher and, if it is for high-priority work, it can be immediately radioed to a mechanic. Since each mechanic has a truck stocked with parts and tools, the mechanic may proceed directly to the job site and complete the work without having to return to the shop.

Radios, automated ticket-writers, and a vehicle for every worker would sound very appealing to most in-house family housing maintenance operations, but they would hardly hope to obtain them. It is interesting to note, however, that not only Camp Lejeune but also PWC Pensacola and Cherry Point MCAS had a vehicle for every housing maintenance worker, as did contractors at Keesler and Hill Air Force Bases. In fact, only the in-house CA winner at Offutt Air Force Base did not have a vehicle for every craftsman. At non-competed activities, in contrast, the typical allocation of vehicles is one for every two to four workers (depending on Service and Command) for in-house activities. It was clear that local management had recognized early in its preparations for CA competition that housing maintenance workers without transportation are not only nonproductive but also require other workers to taxi them from job to job. To make matters worse, without their own vehicles, the workers can often find themselves without the necessary part or tool to complete the job and have to call for transportation back to the shop to get the needed part. A single job could easily tie up two workers for four one-way trips! Both Camp Lejeune and Cherry Point MCAS feel that vehicles and radios are the keys to maximizing productivity, reducing the size of their

work forces, and winning their competitions. Both installations requested extra vehicles, and neither was able to obtain them. To win the competition, each was forced to reallocate vehicles from other activities on the installation to family housing maintenance.

Aside from vehicles and radios, we did not find an abundance of productivity-enhancing equipment purchased for family housing maintenance workers because of CA competition. Each manager told us about heavy use of power tools, and we observed that two had purchased airless paint-spraying equipment. However, it is not clear that competition provided the impetus for those purchases. What is interesting is that family housing maintenance managers appear to shun the fast-payback, capital-equipment funds the Services have established for the very purpose of providing productivity-enhancing equipment (e.g., the Air Force's FASCAP program), considering them too difficult to use because of the amount of justification that must be provided.

In audiovisual services, we saw much more attention paid to improving employee productivity with equipment. The in-house activity at Hill Air Force Base has purchased a color print processor that reduces the time to produce a dry print from 5 minutes to 48 seconds. The processor takes less than 2 minutes to clean (the older version took well over 1 hour) and has premixed, ready-to-use chemical kits. Hill AFB has also purchased an ultrasonic rack and tray cleaner to reduce time spent in that effort and has modified its Kodak 8S Color Printer to handle black-and-white prints at a much faster rate than was previously possible. A microprocessor-controlled enlarger head automatically selects correct filters for exposure, eliminating much trial-and-error printing of enlargements. At Fort Sheridan, an automatic slide collator that quickly separates multiple copies of slides (a task that previously had been done by hand) and a color slide processor reduce the cost

of producing a slide from 35¢ to approximately 11¢ and, more importantly, free workers for other tasks. Audiovisual managers do not seem to be using fast payback investment funds either, and have sometimes resorted to leasing equipment rather than purchasing it when they feel they may obtain it more quickly.

Managers of in-house activities that have won CA competitions seem much more keenly aware than their counterparts who have not competed that vehicles, equipment, and communications systems are worth fighting hard for, and they seem to put a great effort into being aware of what is available and obtaining assets they feel they can justify.

WORKER GOALS AND ACCOUNTABILITY

Although equipment, vehicles, and communications are designed to make individual workers more productive, the most important challenge to base support managers, whether contractor or in-house, is to obtain a positive internal commitment from the workers to do their work quickly and well. All too often, workers in support activities are indifferent to the base's mission and, because they have no clear-cut goals, they feel no real need to push themselves hard to do a good job.

As expected, contractors were generally found to have an edge over in-house activities in providing a goal for their workers. Contractor's profit incentives and customer/client relationships make it easier for them to convey to employees what is expected of them. Both Pan American and Northrop strongly stress to their employees that the satisfaction of their Navy and Air Force customers is paramount, and the result is quite visible in the way the employees treat their customers. It is clear that the negative aspects of working for a contractor, particularly the relative insecurity of employment by a company that could lay off an employee almost instantly, keeps workers on their toes; however, something more has been done to activate them into a

positive, synergistic work force. Day & Zimmermann/Basil (DZB) Corporation's site manager at Hawthorne Army Ammunition Plant told us that DZB's employees are keenly aware that the company's very survival rests in their hands, and this thought provides motivation to produce at the highest level possible.

For in-house winners, activating workers is considerably more difficult. Employees usually perceive the whole CA process as an attempt by the government to take advantage of them, and the reductions in force, grade reductions, and increased per capita work load that follow an in-house win can hardly be expected to increase morale and commitment. The only positive aspect from their perspective is the thought that they have faced direct competition with a skilled contractor and won. The more skillful managers with whom we spoke had used this emotional issue to the limit. The transportation manager at PWC Pensacola has even framed the formal summary of bids for his light vehicle maintenance activity and displayed it prominently so that all could see how they beat the contractors.

Unfortunately, the thrill of having won a competition is short-lived, and employees are soon disenchanted when they find themselves working harder than ever for the same or sometimes lower pay. The better managers of in-house activities have worked hard to create goals for workers to meet or exceed so that they might have a means of gauging their contribution to the overall work effort. The most impressive example that we saw was in family housing maintenance at Camp Lejeune.

Family housing maintenance is not an easy area in which to establish worker goals; the most commonly used method for measuring adequacy of work done is the number of customer complaints received. At Camp Lejeune, the PWS for family housing maintenance was written as an indefinite quantity contract,

and both Government and contractor bids had to be based on a cost-per-unit-of-work basis in several work categories. To prepare the Government's bid, the Maintenance Division performed a detailed audit of all work done over a specified period and used both Engineered Performance Standards and locally developed standards to set unit prices. In order to ensure that costs were kept within contract tolerances, it was necessary to set up a new cost-accounting system, which was done soon after the Government won the bid.

The family housing worker goals came into being almost by accident. Management attempted to explain the new cost-accounting system to workers, telling them that work would be categorized in conformity with the contract and that both time charged and units of work completed would be collected for each job. For the workers, the very complexity of the system seemed to raise more questions than it provided answers. Management tried to simplify its explanation and ultimately produced a one-page summary of unit standards (in minutes) for each category of work in the contract (Figure 2-1). The workers were each given a copy of the standards and told that they were expected to complete any job they were assigned within the standard time. They were also told that the cost-accounting systems could accumulate results by employee so that an employee's performance could be compared with the standards. The result has been overwhelming. The workers have adopted the standards as goals to exceed, and they have done so at a very impressive rate. They seem to welcome the existence of a goal to work toward, and both morale and productivity in the family housing maintenance shop are quite high.

The establishment of worker goals, be they standards, profit targets, cost limits, or levels of customer satisfaction, was prevalent within activities that had won contract competitions. It appears that organizations that have concentrated heavily on such goals and that have held workers accountable

to them are more productive and secure a higher level of employee morale and loyalty than those that have not.

FIGURE 2-1 FAMILY HOUSING MAINTENANCE CONTRACT ENTITLEMENTS
1 FEBRUARY 1982

CONTRACT LINE NO.	DESCRIPTION	UNITS	AVG. TIME ALLOW-MIN.	CONTRACT LINE NO.	DESCRIPTION	UNITS	AVG. TIME ALLOW-MIN.
01	Ext. Walls	SF	7	28	Bird/Animal/Fest Remov.	C	75
02	Int. Walls & Ceilings	SF	8	29	Tenant Hot Home (1HR)	C	5
03	Wallpaper	SY	14	30	Refrigerators/Ranges	C	54
04	Conc. Floors or Subfloor	SF	23	31	Other Appliances	C	54
05	Fin. Hardwood Flooring	SF	13	32	Elec. System	C	43
06	Carpet - Install	SY	5	33	Plumb. Syst. Repair	C*	36
07	Carpet - Clean	SY	2	34	Plumb. Fixt. Repl.	F	163
08	Lin/Car/Vinyl Tile	SF	6	35	Heating System, Repr.	C	28
09	Fixture Sealant	LF	2	36	A/C Syst. Repr.	C	42
10	Int. Door & Frame	C	57	37	Heat Pump Repr.	C	33
11	Window Screen	C	38	38	AC/Heat Pump Comp. Install	F	341
12	Screen/Storm Door	C	33	39	A/C Checkout	C	70
13	Ext. Door & Frame	C	73	40	Heating Syst. PM	DU	76
14	Window and Frame	C	53	41	Heat Pump Checkout	C	42
15	Reglase Window/Door	SF	32	42	Filters	DU	11
16	Basement	SF	3	43	Mowing	A	43
17	Roofing	SF	4	44	Clean-up	A	4
18	Gutter/Downspout/Clean Rf.	C	99	45	Leaves/Pine Straw	A	36
19	Porches, Garages, Etc.	C	132	46	Tree/Shrub Trim	C	62
20	Cabinet Repair	C	16	47	Drainage	CY	31
21	Cabinet Replace	U	264	48	Erosion Control	SY	2
22	Lock Set	E	51	49	Custodial Service	E	1188
23	Keys	E	4	50	GOOD-Reliab.	E	177
24	House Accessories	C	37	51	Repl. Above Grd. Fuel Tank	E	153
25	Supporting Accessories	C	49	52	Repl. Under Grd. Fuel Tank	E	603
26	Blinds/Rods/Shades Repr.	E	39	53	Lawns	E	216
27	Blinds/Rods/Shades Repl.	E	34	54	Down Time		

LEGEND OF UNITS: C - Service call; SF - Square feet; SY - Square yard; LF - Linear Feet; U - Units; E - Each;
A - Acre; CY - Cubic Yard; DU - Dwelling Unit.

COMPUTER SUPPORT

With the sharp reduction in manpower experienced by many in-house winners and the advent of powerful, affordable microcomputers, we expected to find many bases using computers to perform routine repetitive tasks. Unfortunately, only a few of the bases are able to assemble the expertise, available manpower, and budget to do so.

At Fort Sheridan, computers are being used as productivity-enhancement tools to generate products that were once produced by hand (and which could be again if necessary). We observed two distinct uses of computers at Fort Sheridan. First, a Franklin computer is used for "image processing" in

the graphics shop. Image processing utilizes computer graphics software to lay out and compose charts, graphs, or other visual products on a screen before they are produced in hard copy. This procedure allows the graphic artist to visualize, test, and revise the product on the computer rather than having to produce successive hand-drawn products. The second observed use of computers is for administrative functions such as labor accounting, customer billing, and supply inventories. Since Fort Sheridan provides many of its services on a reimbursable basis, cost data must be collected, stored, and processed for accounting and billing purposes. The personal computer is ideal for that use. By using an off-the-shelf data base package to create a simple cost-accounting system and by having all employees log and submit their billable time each week, the office can in minutes produce customer bills that once took hours. The machines used for these tasks, an IBM Personal Computer and an Osborne, are owned by individuals in the audiovisual shop who have a personal interest in computers and who recognized the potential for labor savings through automation. One reason that Fort Sheridan has been able to automate so effectively is that these individuals have been willing to use their own machines and to spend their own time learning to apply the computer's capabilities to the requirements of the office.

PWC Pensacola also acquired a personal computer, a Tandy TRS80, which it is using in the Transportation Shop for a number of tasks. Preventive maintenance histories and schedules for all vehicles stored in its files are used for projecting maintenance work loads and for reminding customers to bring in their vehicles for maintenance. All maintenance performed on a vehicle is recorded and stored so that the vehicle history is available for identifying recurring problems and tracking life-cycle costs. The computer is also used by the vehicle dispatcher. As at Fort Sheridan, a critical factor in using

the computer effectively is the availability of staff members who know how to use the system and how to apply it to the task at hand. Pensacola hired a college student on a part-time temporary basis to write the initial programs but has not been able to include computer skills in the descriptions of any current staff position. This lack of expertise has prevented any additional software development and has hampered the office in fully utilizing this resource.

It appears that many BOS tasks lend themselves to automation. Unfortunately, an installation has many hurdles to overcome before establishing itself as a computer user. First and foremost is the significant predisposition by Services towards centralized systems management, which discourages the acquisition of hardware and the development or application of software by a base-level activity. Locally tailored systems, such as those observed at Fort Sheridan and PWC Pensacola, are generally discouraged. The second hurdle is that positions must be realigned and individuals trained before an activity can become computer-capable. Financing of hardware also needs to be addressed; PWC Pensacola, an industrially-funded activity, had less of a problem acquiring hardware than does Fort Sheridan, where most of the computers being used are owned by employees. Given the many obstacles to becoming automated, it is understandable that the use of microcomputers is still uncommon in audiovisual and family housing maintenance offices.

ELIMINATE UNNECESSARY WORK

As a result of CA competition, BOS managers are taking a hard look at the work performed by their staffs and are eliminating or modifying tasks they consider unnecessary. This change has not been easy. Over the years, support organizations have been justifiably proud of the very high levels of service they gave their customers. Service above and beyond standards was willingly provided and had come to be routinely expected.

With CA competition and the consequent reduction in manpower, managers feel compelled to find ways to maintain an acceptable level of service with reduced resources. They seem to recognize that it would not make sense to write a contract that provided higher-than-standard levels of service since its cost would be prohibitive. This recognition has created a new environment that does not allow many of the old practices to continue. In-house activities that win competitions must now operate as in-house contractors, with a fixed budget and a detailed PWS, and tasks routinely performed before competition can be continued only if they are included in the PWS. From these changes, a new relationship with the customer is developing.

At PWC Pensacola, the Transportation Shop compares the Navy's vehicle maintenance intervals with those of the manufacturers, and in cases in which the Navy interval schedules are more stringent, the manufacturers' intervals are followed. The transportation manager reasons that the additional maintenance required by Service regulations is unnecessary and was successful in receiving a waiver from NAVFAC P-300 to convert to manufacturers' intervals.

The contractor at Hawthorne AAP avoids what it calls "tinkeritis," which is the tendency to create new problems by tinkering with a sound vehicle. It avoids disassembling inexpensive parts for routine maintenance when a policy of "replace it when it fails" is more cost-effective for the Army.

At many military installations, multicolor overhead transparencies are a standard product of the audiovisual shop. Both Keesler and Hill Air Force Bases and Fort Sheridan have stopped producing transparencies of this type and now produce only single-color transparencies. Keesler Air Force Base has not only eliminated expensive transparencies but has also simplified many of its other audiovisual products: in place of complex graphics, simple line drawings are often used; past products are saved and reused for other jobs;

and self-help areas are emphasized, allowing users to produce products such as Thermofax slides for themselves.

Finally, the Family Housing Maintenance Office at Pensacola cut its scheduled maintenance work load from 8.0 to 0.8 staff years when it recognized that most of the 8 staff years of work was scheduled but never performed. It became obvious that the schedule was generally ignored and needed to be scaled down to a realistic level. After analyzing historical data from the past few years, the 0.8 staff year figure was agreed upon. Homeowners' responsibilities were redefined to include some maintenance, such as furnace filter replacement, and maintenance on some items was simply stopped when it was found not to be cost-effective. The Family Housing Maintenance Office cites as an example that hot-water-heater maintenance is no longer being performed under the theory that it is less expensive to fix the heaters when they fail than to continually maintain them.

Cherry Point MCAS took the bold step of charging tenants a fee for certain types of house calls. Tenants who lock themselves out of their home, are not home for a scheduled maintenance appointment, or have damaged the house through negligence are charged for maintenance services. The purpose of this policy is to raise the tenants' awareness of their own responsibilities and to reduce the amount of unnecessary family housing maintenance work. Camp Lejeune has trained its operators on the incoming call desk to ask the tenant a series of questions and to request that the tenants themselves perform simple tasks such as resetting a tripped garbage disposal circuit breaker.

CONTRACTOR-SPECIFIC APPROACHES

To reduce the costs of their operations, contractors have taken some additional steps that we did not observe among in-house winners. Although

many of these steps would have merit in an in-house setting, they apparently have not been considered, perhaps because they would require extra effort by other support activities that were not themselves threatened by competition.

Overtime

Overtime is frequently used by contractors to meet periodic peaks in work load. Contractors use overtime to allow for even more reductions in manpower levels, and they seem to encourage its use. Northrop's site manager at Vance Air Force Base told us that he considers a section that does not regularly use overtime to be overstaffed and takes action to reduce its size. In-house winners told us that they did not plan on the use of overtime for normal day-to-day business, considering it only for emergencies or when vacancies cause work to back up. The impression they seem to have is that overtime is an indication of poor management and that installation commanders make it clear that overtime is to be avoided whenever possible.

Part-Time Labor

Part-time labor is viewed in much the same light as overtime. Contractors often hire off-duty military or their dependents for jobs that do not require full-time employees. At Vance Air Force Base, after-hours refueling of aircraft is done by part-time workers, the job requiring only a few hours of work each evening. Contractors consider military dependents as a resource that can be easily attracted to part-time jobs conveniently close to their homes. The in-house winners we visited do not use part-time labor, with the exception of the student summer employees we observed at two locations, because they are under the impression that personnel offices cannot hire part-time workers. It should be noted, however, that full-time temporary workers are frequently used by both contractors and in-house organizations to meet seasonal work loads, such as the heavy summer turnover of family housing units.

Simple Supply Procedures

Contractors have taken steps to reduce the time workers spend waiting for parts significantly by establishing relationships with jobbers for common, inexpensive items such as building hardware or photographic supplies. In-house winners are usually constrained to the use of a cumbersome supply system that seems to emphasize competitive prices, often at the expense of response time. To a contractor, it makes no sense to haggle over a small price reduction if a worker is standing idle at great expense. In-service winners agree but indicate that it will take more momentum than they can provide to change their sources of supplies.

Responsive Vehicle and Equipment Maintenance

Like a worker without a part, a worker without transportation or equipment is of little benefit to a contractor, so most contractors we visited go to extraordinary steps to make sure that each worker has the transportation resources needed. We have already stressed the importance winners place on vehicles in family housing maintenance. At Hawthorne Army Ammunition Plant, Day & Zimmerman/Basil Corporation has gone so far as to perform all routine vehicle maintenance at night to preclude a worker from being without a vehicle during working hours. The housing maintenance contractor at Hill Air Force Base has a loaner vehicle to be used when a worker's vehicle is out of commission. In-service winners often complained to us that they are at the mercy of another organization when it comes to vehicle maintenance and that vehicles are scheduled for routine work without regard to the user's work load or needs. They seem unable to change this procedure except at PWC Pensacola where Vehicle Maintenance is a PWC activity. There, housing maintenance personnel may rent another vehicle from the pool when their vehicles are being serviced.

While it appears that many of the contractor-specific approaches above could be adopted by the Services internally, two of the ideas that contractors use -- lower wages and quick personnel turnover -- are not within DoD's ability to independently control.

Lower Wages

The contractors we visited paid lower wages than the in-house activities they replaced. Contractors must pay at least the minimum wages called for in their contracts under the provisions of the Service Contract Act (41 U.S.C. §351-357). These minimum wages are determined by the Bureau of Labor Statistics on the basis of a survey of local collective bargaining wage rates or a survey of local industry wages (without restriction to industrial classification code and specific to the trade or trades in question). Government wages, on the other hand, are based on surveys performed by OSD's Wage Fixing Authority. Those surveys are restricted to specific industrial classification codes (for example: local and state government wages are not sampled) and are not trade-specific. In common trades such as plumbing, carpentry, and the like, we found the Service Contract Act wages to be lower than the wages Government employees receive for the same job. We were told by OSD's Wage Fixing Authority that this is not so for other blue collar workers, particularly aircraft mechanics, who are paid much higher wages in the private sector.

The problem is that contractors are able to bid at a lower hourly labor rate for A-76 competitions in audiovisual and family housing maintenance services, and this lower rate biases the costs in their favor. Circular A-76, however, gives the Government activity a 10 percent cost advantage, which more than makes up for this bias, but Government winners still pay more for their labor. Accentuating the problem even more is that personnel cuts made during

the A-76 efficiency review by in-house activities usually affect the most junior employees and senior employees in high pay steps remain. A new contractor would not have employees with such seniority.

The Service Contract Act/Civil Service wage disparity is not restricted to blue-collar wages. We were told by the Manpower Office at Keesler Air Force Base that the Service Contract Act minimum wage for a word processing specialist, for example, was set at \$4.50/hour while the Civil Service wage was \$6.50/hour for the same job.

Quick To Hire and Fire

Contractors respond quickly to fluctuations in personnel needs, hiring expeditiously when it becomes obvious that additional manpower is needed and releasing employees when manpower levels are too high. They also deal more quickly with problem employees; Pan American gives its Bangor employees a maximum of 2 months to improve or leave when poor performance is noted. All of the contractors with whom we spoke emphasized that their ability to release poor performers quickly not only relieved them of the tremendous load of carrying such workers but also had a very positive effect on the rest of the work force who see by example the results of poor performance. In-house winners, on the other hand, told us that they find it exceedingly difficult to remove a poor performer, that it takes an inordinate amount of the supervisor's time, and that it frequently results in a series of appeals that can last for months. They complain that other employees perceive that it is possible to exploit the system, and that their productivity is consequently lower than that of contractor employees.

In-house activities find that it is also very difficult to keep positions filled because of long hiring lead times. Fort Sheridan told us that it had six vacancies for most of last year in its 23-position audiovisual

shop. PWC Pensacola has had to resort to borrowing craftsmen from Base Maintenance Shops to keep its Family Housing Maintenance Shop fully staffed. Camp Lejeune has not been able to fill vacancies any faster after competition, despite its dependence on fewer maintenance positions for the same work load.

It appears that contractors are aware of their ability to quickly adjust staffing to work load and are willing to take a greater amount of risk in preparing their bids than are in-house activities.

3. RECOMMENDATIONS FOR HELPING IN-HOUSE WINNERS

Most in-house winners are extremely well motivated and well attuned to the operating details of their activities. The operations they manage are not only efficiently organized, but they are also highly productive with impressively qualified workers. In some areas, however, in-house winners remain at a disadvantage by having to conform to external constraints that do not exist for contractors.

Most of the contractor-specific approaches discussed in Chapter 2 ought to be examined by the Military Services for applicability to in-house activities. The use of overtime and part-time labor, for example, has been demonstrated by contractors to be cost-effective, yet both are discouraged or at least are not encouraged by the Services. Simple procedures for supplying common items to in-house activities have been implemented with COPARS (Contractor-Operated Parts Store), COCESS (Contractor-Operated Civil Engineering Supply Store), and GOCESS (Government-Operated Civil Engineering Supply Store). However, those procedures seem to stress achieving lower parts costs often at the expense of worker delays, and they are not in use at many installations. More responsive vehicle and equipment maintenance (such as after-hours routine maintenance), which could prove to be highly cost-effective, was not observed at locations with in-house winners.

The problems of wage differences between Government and contract workers and the tedious process to hire and fire Government employees are caused not only by a very elaborate civilian personnel management system but are typically required by law. Contracting-out is a subject not warmly embraced by many of the members of Congress, and OSD should continue to solicit their

support to modify the Civil Service system to make in-house employees' wages and tenures more like those in the private sector, thus preventing the loss of more jobs to contractors.

Other items that handicap in-house winners and prevent them from becoming as efficient as contractors who use the same PWS are described in the following sections.

BUDGET FLUCTUATIONS

Contractors that win CA competitions sign contracts with the Government that guarantee them predetermined payments if work is satisfactorily completed (all of the contracts we observed were fixed-price, and several had incentive fees). An in-house winner, on the other hand, does not have the luxury of a guaranteed budget and frequently faces fund reallocations when other installation activities experience shortfalls or surpluses. Such fluctuations may require not only a substantial amount of management's time (to reprogram work and forecast revised spending rates) but they may also cause work to be stopped and even restarted, driving costs much higher than they would have been if the fluctuations had not occurred. We do not recommend that in-house winners be given a fixed, obligated budget as contractors are, but we do suggest that the Military Services become more aware of the difficulties experienced by CA in-house winners with such budget fluctuations and provide them with as much stability as possible.

VEHICLE AND EQUIPMENT PURCHASES

We found that in-house winners often base their bids on the assumption that they will be provided equipment or vehicles that they are either authorized or have arranged to obtain. Unfortunately, such items do not always materialize, and the in-house winner is forced to cope without them. For example, the in-house bid for family housing maintenance at Offutt

Air Force Base was based on the availability of rental vehicles during the peak summer work season, and the vehicles were available and used in the first year of operation under the new PWS. In the following year, however, the Base was unable to provide funds for vehicle rentals and the maintenance manager had to make do without them. In the same circumstances, a contractor could legitimately argue that the Government had caused a changed condition and could insist on a contract price adjustment; the in-house winner has no such option. We recommend to the Services that equipment and vehicle needs be carefully determined and costed during the bidding process by in-house managers and that before an in-house activity is declared the winner, a formal arrangement be made to assure that such resources will, indeed, be available.

We observed no use of available productivity investment funding by in-house winners. This was surprising since productivity-enhancing equipment was frequently acquired by audiovisual managers to offset the reduced work force. More often than not, however, the equipment was purchased after the manpower cuts had occurred, and the ability to sacrifice a position in return for purchase of an item of equipment with fast payback had already been lost. Activity managers expressed little interest in productivity funds because of the extensive justification necessary to obtain them and, in some cases, the fact that they take too much time to obtain. Most of the equipment we observed was purchased with Operations and Maintenance funding although some was leased with a buy-out option.

EMPLOYEE-OWNED TOOLS

In the private sector, craftsmen in trades common to family housing maintenance own the hand tools they most often use. All contractors we visited required such employees to provide their own tools as a condition of

employment. We noted that Navy and Marine Corps family housing maintenance workers also provided their own tools; Air Force employees, on the other hand, were issued tools, which were replaced when lost or damaged at no cost to the craftsman unless abuse or neglect could be demonstrated. Air Force contractors told us that they considered this to be a factor in their favor since the replacement of hand tools was an expense that they did not have to consider in their bids. Since employee tool ownership appears to be a common trade practice and since other Services have been able to incorporate the practice into their union agreements, we recommend that the Air Force consider doing the same.

The above recommendations would create a climate more favorable to in-house winners that would allow them to operate more independently and abide more fully with the terms of their PWS. By reducing the uncertainties and constraints now facing in-house activities undergoing competition, these changes should allow them to make less conservative bids and compete more keenly with contractors.

APPENDIX A
AUDIOVISUAL SERVICES HANDBOOK

Government employees generally take a negative view of contract competition in audiovisual services. They feel that such competitions result in a contractor winning and the federal employees facing a large reduction-in-force that will leave them unemployed or working for the contractor for longer hours and lower pay. What is not considered by those employees is that over half of the contract competitions in the audiovisual services field are won by the in-house work force and those in-house winners are thriving. They have made significant changes in the way they do business; they had to so they could keep their jobs. The in-house winners are now providing audiovisual services at costs lower than they considered possible before they were forced to compete.

We visited several winners and found that many of them have developed similar approaches for reducing the costs of providing quality audiovisual products and services to their customers. These new approaches are used at many installations and are not limited to one Military Service. They condense into the following eight approaches that you, the Audiovisual Manager, can take to make your activity more productive.

- Automate and update your equipment.
- Simplify your products.
- Cross-train your workers.

Appendices A and B are suggested texts for handbooks that we recommend be provided to audiovisual and family housing maintenance managers at installation and major command levels in the Military Services. We recommend that they be formatted as illustrated pamphlets but have included only the texts for this report.

- Extend the supervisor's span of control.
- Don't be afraid of overtime.
- Keep everything under one roof.
- Make a computer your clerk.
- Encourage self-help work.

The rest of this brochure expands on those approaches and shows how each idea has helped the winners of contract competitions.

I. AUTOMATE AND UPDATE EQUIPMENT

Typical Practice

In recent years, the audiovisual field has been flooded with new products, many of which automate tasks that once had to be done manually. Unfortunately, many military installations still use outdated equipment such as, for example, older photo print processors, which are slow and complicated and require a lot of time for chemical mixing and cleaning. The limited availability of funds, especially for high-value capital equipment, causes many managers to make do with less than state-of-the-art equipment.

Winners' Actions

Winners are acutely aware of the value of a worker's time. Time spent on such indirect tasks as cleaning photo lab equipment, making test prints, or mixing chemicals is viewed as an expense that could cause the activity to lose a contract competition. Winning managers have not been afraid to spend funds to make workers more productive as long as benefits outweighed costs. Some audiovisual winners, for example, purchased high-speed color print processors, which reduced the time from dry paper to dry paper from approximately 5 minutes to 48 seconds. The new processors also require much less time to clean than the older units (2 minutes versus 1 hour) and use premixed chemicals, which save considerable mixing time and produce consistent quality prints. At Hill Air Force Base, labor-saving equipment in the photo labs included a high-speed print processor, an ultrasonic rack and tray cleaner, which virtually eliminates time spent washing such items, a modified 8S color printer that now handles both color and black-and-white prints quickly and automatically, and a computerized enlarger head that senses the correct print exposure and greatly reduces the number of test prints necessary. The Audiovisual Manager at Hill Air Force Base told us that each

of these items would pay for itself in labor savings (by increasing the photo lab's output without increasing manpower) over a very short period. At Fort Sheridan, the purchase of an automatic slide collator has saved considerable time once spent on the mundane task of separating multiple copies of slides, and an automatic slide mounter has produced similar savings. A new color slide processor has brought the cost of original slides down to 11 cents each and duplicates to 7 cents each; it also significantly reduces the cost of chemicals since it uses a fixed amount regardless of work load. The processor can process three rolls of film simultaneously, vastly increasing photo lab productivity. Computer-aided graphics systems are heavily used at Keesler Air Force Base, Fort Sheridan, and Fort Jackson.

Recommendation

Give serious consideration to purchasing equipment that improves productivity of audiovisual workers, particularly in the photo lab. Consider using productivity investment funds that are available in each Military Service for productivity-enhancing equipment that self-amortizes over a short period of time. To qualify for funds, an organization must be able to demonstrate quantifiable actual savings, usually in the form of reduced operating costs. Competition winners have found such purchases to be well worthwhile.

II. SIMPLIFY YOUR PRODUCTS

Typical Practice

Personnel in audiovisual activities provide a high level of service to their customers and are justifiably proud of their performance. Unfortunately, the level of service is sometimes higher than required and is often provided without considering cost.

Winners' Actions

Winners have taken a long, hard look at the level of service they provide and compared it to the real needs of the customer. They have found that customers often ask for services they really don't need and that a little salesmanship can often result in a simpler, less expensive product. For example, at Keesler Air Force Base, the Audiovisual Manager spent considerable time analyzing historical production records while preparing the contract specification for competitive bidding. He found that a substantial percentage of all visual aids produced for past briefings had been high-quality multi-colored overhead transparencies. By talking with his customers, he found that many of the transparencies had been used only once or twice and that audiences to whom they were shown would have reacted as favorably to simpler single-color transparencies. Since that time, his graphics personnel have asked customers who request multicolored transparencies to consider using less complicated graphics, and they have been able to reduce the number of complex projects to an almost negligible part of their work load. Productivity, in terms of number of charts per dollar, has increased dramatically. Similarly, in illustrating training texts, Keesler Air Force Base's graphics shop has substituted simple line drawings of aircraft assemblies and subassemblies for the complex shaded isometrics that had been the norm. The new drawings convey

the same concept to students, and the time required for each drawing is reduced substantially.

Recommendation

Analyze your products from the point of view of your customer. Realize that customers often ask for work based on what they have seen in the past when they would often be satisfied with a simpler, less costly product.

III. CROSS-TRAIN YOUR WORKERS

Typical Practice

Most audiovisual services employees are hired to perform work requiring a single skill: photography, graphic illustrations, and in the case of the Army, carpentry and other trades. They are not expected to perform work in other specialties. Should the work load in a single skill area become especially heavy, a mismatch can develop between the work to be performed and the worker skills available. An organization can also become highly dependent on a single individual whose skills (for example, chemical mixing or a computerized graphics operation) are unique within the work group.

Winners' Actions

Competition has forced audiovisual managers to look at ways of getting the most from their work forces. All the winners we visited used photographers to develop their own photographs, but that approach is not uncommon. What we did find unique was the use of photographers at Fort Sheridan to do computer graphics work when backlogs develop there -- and the photographers have adapted well to this new endeavor. While they are not tasked to conceptualize an entire presentation, they do lay out individual charts and graphs and have vastly improved the flow of work during periods of peak demand. Managers of the large graphics section at Keesler Air Force Base have engaged in a tremendous push away from specialization and told us that multiskilled illustrators can not only be moved from specialty to specialty when work loads change but that by rotating an employee between specialties, managers can more easily determine where employees excel. The employees also benefit; they develop a broad skill base and are better qualified for job progression than they would be if they specialized (this latter benefit also seems to increase the employees' interest in remaining with the organization).

Recommendation

Cross-train and rotate employees as much as possible. Winners' experience has shown that this approach will not only increase your ability to meet heavy demand for specialized work but will give your employees a chance to learn new skills they can use to progress.

IV. EXTEND SUPERVISOR'S SPAN OF CONTROL

Typical Practice

Audicvisual activities are typically organized in an almost identical format, and whether called Base Audiovisual Service Centers or Training and Audiovisual Support Centers, they invariably contain separate sections for graphics, film library, photo lab, and (in the Army) training devices. Where there is a section, there is a supervisor; so audiovisual activities usually have a section chief for each of the sections and, depending on size, second- and third-level supervisors as well.

Winners' Actions

To keep costs low during competition, winners carefully evaluated each supervisor's span of control. They frequently identified supervisory positions that could absorb more responsibility and took action to reduce the total number of supervisors accordingly. At Fort Jackson, the Training Devices and Graphics Sections were placed under a single supervisor, reducing one GS-11 position; Hill Air Force Base is combining its film library and administrative sections. Winners, under competitive pressure, are working their supervisors harder and finding that the results pay off in streamlined, more-productive organizations. (Contractors universally told us that they cut the number of supervisors to the absolute minimum.)

Recommendation

Examine your supervisors' spans of control. Consider reorganizing to place more supervisory responsibility in fewer positions. Winners have proven that this approach is both possible and cost-effective in the audio-visual field.

V. DON'T BE AFRAID OF OVERTIME

Typical Practice

Higher management policy often discourages audiovisual and other base support managers from using overtime on a regular basis. Overtime seems to be reserved for emergency use only, and significant use of overtime is considered a sign of poor management. As a result, audiovisual managers tend to staff at a higher level so they can handle work load peaks. Activities using military personnel do not feel the same pressure to avoid overtime, but we found that such unpaid overtime of military workers is quickly offset by granting compensatory time off.

Winners' Actions

Contract winners told us that they frequently use overtime. They staff for the average work load and satisfy peaks by using paid overtime. In-service competition winners, on the other hand, use less overtime because they still feel external budgetary pressures to avoid it.

Recommendation

Audit your work load and determine whether it has periodic peaks that might indicate that a full-time position is not required. Consider eliminating the position if overtime funding can be budgeted. Solicit support from your installation finance and personnel offices in this endeavor; it could increase your productivity dramatically.

VI. KEEP EVERYTHING UNDER ONE ROOF

Typical Practice

Large audiovisual activities often feel pressure from large users of their services to establish satellite graphics shops proximate to and dedicated to those users. While the customer often is satisfied with such dedicated graphics support nearby, such shops are usually inefficient since they require their own duplication equipment and seldom have a steady work load.

Winners' Actions

Winners of audiovisual services competitions have brought their graphics sections back to a single location. Keesler Air Force Base for example, had up to six satellite shops located throughout the base. Each was a customer-dedicated organization requiring its own people and equipment, and there was little interchange between the shops. Since the work load for each shop was extremely variable, one shop might be overloaded while another was in a slack period. Since competing, all of Keesler Air Force Base's graphics assets have been merged into a single location. Work is now more likely to be done more productively on productivity-enhancing equipment that was not available at dispersed locations, and the work load can be more evenly distributed among personnel with diverse skills.

Recommendation

Consolidate satellite graphics shops into a single location for better use of resources.

VII. MAKE A COMPUTER YOUR CLERK

Typical Practice

Audiovisual centers in a central location serve a variety of customers from different major commands (even different Services) often remote from the central shop. In addition to the problems arising from priorities and schedules, considerable clerical work is associated with the administration, scheduling, and financing of work for so many customers.

Winners' Actions

Winners have turned to automation to streamline routine clerical work such as cost accounting for reimbursable jobs. The most impressive demonstration of this was at Fort Sheridan, where personal computers (which happen to be owned by some enthusiastic audiovisual service employees) have been programmed to store job cost data and to automatically prepare the documentation necessary to bill reimbursable customers. Bills that once took hours to compute are now done in seconds. The computers also automatically prepare reports to show performance of the entire Training and Audiovisual Support Center (TASC) in relation to its objectives, giving managers an instant picture of how the organization is performing. The TASC is also automating its film library records to improve accountability and speed up the issuance and return of audiovisual products.

Recommendation

Consider automating some of your clerical work to reduce costs and improve responsiveness. Fast payback funding is available for purchasing equipment if dollar savings can be quantified.

VIII. ENCOURAGE SELF-HELP WORK

Typical Practice

Many audiovisual activities provide supplies and a working area for customers to construct briefing materials by themselves. The area usually has limited supplies, outdated and used equipment and is often dark and cramped.

Winners' Actions

Winners have learned that when their self-help areas are equipped with up-to-date equipment, ample supplies, and a respectable work area, their customers are more inclined to produce simple transparencies and charts themselves. Combined with a policy of using the simplest possible graphics style for the job at hand (see "II. Simplify Your Products"), this action could significantly reduce the amount of graphics support requested. While this approach may appear as though the graphics work load has simply been shifted to the customer, savings are realized by eliminating the time spent by a customer in communicating needs to a graphics specialist. We saw improved self-help facilities and encouragement of self-help by all of the competition winners we visited, both contract and in-house.

Recommendation

Encourage self-help work by customers. Provide supplies, equipment, and work areas that will make it easy for your customers to create simple graphics products.

APPENDIX B
FAMILY HOUSING MAINTENANCE HANDBOOK

Contract competition in Family Housing Maintenance is often viewed by federal employees as an opportunity for a private contractor to take over their functions. Many believe that the private contractor will win the competition, a large reduction-in-force will occur, and they will be unemployed or be forced to work for the contractor at lower wages and for longer hours. What is not realized by those employees is that one-third of all contract competitions in family housing maintenance are won by the in-house work force and those in-house winners are thriving. They have made significant changes in the way they do business; they had to so they could keep their jobs. The in-house winners are now providing family housing maintenance at costs lower than they considered possible before they were forced to compete.

We visited several winners and found that many of them have developed similar approaches for reducing the costs of providing family housing maintenance services to their customers. These new approaches are used at many installations and are not limited to one Military Service. They condense into the following eight approaches that you, the Family Housing Maintenance Manager, can take to make your activity more productive.

- Equip your workers.
- Use multiskilled maintenance mechanics, not specialists.
- Give your workers goals.

Appendices A and B are suggested texts for handbooks that we recommend be provided to audiovisual and family housing maintenance managers at installation and major command levels in the Military Services. We recommend that they be formatted as illustrated pamphlets but have included only the texts for this report.

- Eliminate unnecessary work.
- Fit the skills to the job.
- Use one shop.
- Let the foremen get their hands dirty.
- Don't be afraid of overtime.
- Let computers do the paperwork.

The rest of this brochure expands on those approaches and shows how each idea has helped the winners of contract competitions.

I. EQUIP YOUR WORKERS

Typical Practice

Most housing maintenance shops have many more workers than vehicles, and most of their vehicles are not equipped with radios. Because the shops are forced to taxi workers from job to job, another worker must drive the vehicle and considerable time is lost to waiting for rides. To make matters worse, without their own vehicles, workers who find themselves without the necessary part or tool for a job have to call for transportation to the shop to get the needed part. Thus, a single job could conceivably tie up two workers for four one-way trips!

Winners' Actions

Winners are acutely aware of the value of a worker in time. Labor costs are the predominant part of a contractor and an in-house winner's total operating budget, and managers devote a significant portion of their efforts to making sure that they get the most out of every worker. At Camp LeJeune, the family housing maintenance operation has been vastly streamlined by communications and vehicle acquisition. When a trouble call is received in the Family Housing Office, a job ticket is written at the trouble desk and is simultaneously transmitted to an automated ticket-writer in the Maintenance Shop. There, it is received by a dispatcher and, if it is for high-priority work, it can be immediately radioed to a mechanic. Since each mechanic has both a radio and a personally-assigned truck stocked with parts and tools, the mechanic may proceed directly to the job site and complete the work without having to return to the shop.

Winners feel that vehicles and radios are the keys to maximizing productivity, reducing the size of the work force, and winning competitions. The cost of acquiring these items is quickly offset by the tremendous increase in productivity.

Recommendation

Obtain productivity-enhancing equipment, especially vehicles and radio communication devices, for your workers. Your workers are your major investment; make further, smaller investments that will pay for themselves in improved worker productivity. Consider the use of productivity investment funds such as the Air Force's FASCAP, the Army's QRIP and the like to provide the investment dollars necessary.

II. USE MULTISKILLED MAINTENANCE MECHANICS, NOT SPECIALISTS

Typical Practice

Many family housing maintenance workers are still hired to perform tasks in a single trade, such as carpentry, plumbing, or electrical, and are not expected to perform tasks in other specialties. If the work load in one trade area becomes especially heavy, a mismatch can develop between the work to be performed and the worker skills available. An organization can also become dependent on those individuals whose skills are unique within the work group.

Winners' Actions

Winners are heavily staffed with general-purpose maintenance mechanics who perform a variety of housing maintenance and repair tasks ranging from simple carpentry and painting through electrical and mechanical work. When coupled with other productivity-enhancing ideas, such as the use of dedicated vehicles and radio communication, the availability of multiskilled workers allows housing maintenance managers to complete more service calls while sending fewer workers on each job and completing more tasks per trip than would otherwise be possible. With multiskilled workers, the number of supervisors can be reduced since organizational grouping by trades is no longer necessary. Before competition, the 23-person family housing maintenance shop at Keesler Air Force Base had five supervisors to oversee individual trades. The current shop, operated by a contractor, now has 19 employees but only one supervisor. Keesler Air Force Base's manpower team views the failure of the in-house competitor to consider multiskilled workers as the main reason for the loss of the competition to a contractor. Every in-house winner we contacted now places greater dependence on multiskilled workers.

Recommendation

Use multiskilled maintenance mechanics whenever possible. Multi-skilled workers give management the flexibility it needs to keep a maintenance work force at peak productivity. They also provide the appropriate skill level for the many family housing maintenance tasks that do not require a more highly trained worker.

III. GIVE YOUR WORKERS GOALS

Typical Practice

The most important challenge facing base operations support managers is to obtain a positive internal commitment from the workers to do their work quickly and well. All too often, workers in support activities feel far removed from the base's mission, and because they have no clear-cut goals, they have little motivation for doing their best work.

Winners' Actions

At Camp LeJeune, the family housing maintenance competition was won by the in-service work force, which had to operate under an indefinite quantity or "open ended" contract. Both government and contractors prepared their bids by developing a cost per unit for each type of work included in the contract. When the in-house work force won, it became apparent that a cost accounting system would have to be established to collect the workers' costs and charge them to the proper category of work.

The workers were each given a copy of the new time standards (see Figure B-1) and told that they were expected to complete any job they were assigned within the standard time. They were also told that the cost-accounting system could accumulate results by employee so that an employee's performance could be compared with the standards.

The result has been overwhelming. The workers have adopted the standards as goals to exceed, and they have done so at an impressive rate. They seem to welcome the existence of a goal to work toward, and both morale and productivity in the family housing maintenance shop are quite high.

Recommendation

Establish worker goals in your organization; they may be time standards, productivity targets, cost limits, or level of customer

satisfaction. It appears that organizations that concentrate on such goals and hold individual workers accountable to them are more productive and secure a higher level of employee morale and loyalty.

FIGURE B-1. FAMILY HOUSING MAINTENANCE TIME STANDARDS
CAMP LEJEUNE

CONTRACT LINE NO.	DESCRIPTION	UNITS	AVG. TIME ALLOW-MIN.	CONTRACT LINE NO.	DESCRIPTION	UNITS	AVG. TIME ALLOW-MIN.
01	Ext. Walls	SF	7	28	Bird/Animal/Fest Remv.	C	75
02	Int. Walls & Ceilings	SF	8	29	Tenant Hot Water (THW)	C	5
03	Wallpaper	SY	14	30	Refrigerators/Ranges	C	54
04	Comm. Floors or Subfloor	SF	23	31	Other Appliances	C	54
05	Fin. Hardwood Flooring	SF	13	32	Elec. System	C	43
06	Carpet - Install	SY	5	33	Plumb. Syst. Repair	C	36
07	Carpet - Clean	SY	2	34	Plumb. Fixt. Repl.	F	163
08	Lia/Car/Vinyl Tile	SF	6	35	Heating System, Repr.	C	28
09	Fixture Sealant	LF	2	36	A/C Syst. Repr.	C	42
10	Int. Door & Frame	C	57	37	Heat Pump Repr.	C	33
11	Window Screen	C	38	38	AC/Heat Pump Comp. Install	F	341
12	Screen/Storm Door	C	33	39	A/C Checkout	C	70
13	Ext. Door & Frame	C	73	40	Heating Syst. PM	DU	76
14	Window and Frame	C	53	41	Heat Pump Checkout	C	42
15	Reglase Window/Door	SF	32	42	Filters	DU	11
16	Roacross	SF	3	43	Mowing	A	43
17	Roofing	SF	4	44	Clean-up	A	4
18	Outter/Downdrop/Clean Rf.	C	99	45	Leaves/Pine Straw	A	36
19	Porches, Garages, Etc.	C	132	46	Tree/Shrub Trim	C	62
20	Cabinet Repair	C	16	47	Drainage	CC	31
21	Cabinet Replace	U	266	48	Erosion Control	SF	2
22	Lock Set	E	51	49	Custodial Service	E	1188
23	Keys	E	4	50	COOM-Rehab.	E	177
24	House Accessories	C	37	51	Repl. Above Grd. Fuel Tank	E	153
25	Supporting Accessories	C	49	52	Repl. Under Grd. Fuel Tank	E	603
26	Blinds/Reds/Shades Repr.	E	39	53	Lawns	E	216
27	Blinds/Reds/Shades Repl.	E	34	54	Down Time		

LEGEND OF UNITS: C - Service call; SF - Square foot; SY - Square yard; LF - Linear Foot; U - Units; E - Each;
A - Area; CY - Cubic Yard; DU - Dwelling Unit.

IV. ELIMINATE UNNECESSARY WORK

Typical Practice

Personnel in all family housing maintenance shops that we visited provide a high level of service to their customers and are justifiably proud of their performance. Unfortunately, the level of service is sometimes higher than required and is often provided without considering cost.

Winners' Actions

In the past, workers at Cherry Point Marine Corps Air Station would return again and again on service calls when nobody was home. Now, after competition, they recognize the high cost of "no-show" calls and have taken the bold step of charging tenants who have scheduled appointments a fee for "tenant not home" calls. Furthermore, tenants who lock themselves out of their home or have damaged the house through negligence are now charged for maintenance services. This policy seeks to raise the tenants' awareness of their own responsibilities and to reduce the amount of unnecessary family housing maintenance work. Camp LeJeune has trained its operators on the incoming call desk to ask a tenant a series of questions when called on a problem and to request that the tenants themselves perform simple tasks such as resetting or clearing a jammed garbage disposal unit.

The Family Housing Maintenance Office at Pensacola cut its cyclic, or recurring, workload from 8.0 to 0.8 staff years when it recognized that much of the work was not worth its cost and was of low enough priority that it was not always performed. It became obvious that the schedule needed to be scaled down to a realistic level. After analyzing historical data, the 0.8 staff year figure was agreed upon. Homeowners' responsibilities were redefined to include some maintenance, such as replacing the furnace filters, and maintenance on some items was simply stopped when it was not found to be

cost-effective. For example, routine maintenance is no longer performed on hot-water heaters because it is believed to be less expensive to fix the heaters when they fail.

Recommendation

Analyze the services you provide and determine if simplified versions of them would satisfy your customers' needs and reduce the cost of your operation. Become accustomed to looking at "ordinary" jobs and asking if they can't be done better and more cost-effectively.

V. FIT THE SKILLS TO THE JOB

Typical Practice

In the past, the housing maintenance work force has been structured so as to assign the most qualified worker available to a job. A family housing maintenance manager's primary concern was to provide high-quality service to customers, and the best way to do that was to use highly qualified, perhaps even overqualified workers, without much concern for cost.

Winners' Action

Many installations have reduced their operating costs by lowering the average skill level of their work force without lowering the level of service provided to the customer. In most instances, this action was taken after in-house management engineers had conducted a thorough analysis of the work performed and determined that some positions were graded at a higher level than required.

Before competition, tradesman positions in family housing maintenance at Pensacola Naval Air Station were typically classified at the WG 8 level. In preparing for competition, management determined that 85 percent of the work could be performed by workers in Grade WG 7 or lower. Consequently, all positions except one air conditioning maintenance position were downgraded. At Cherry Point MCAS and Camp LeJeune, the skill level of many family housing maintenance positions was lowered from journeyman to maintenance mechanic or helper.

Recommendation

Assign jobs to qualified workers in the lowest possible grade. This practice is more aligned with the spirit fostered by cost competitiveness than the traditional approach of assigning the most qualified worker to a job. The traditional approach is quickly becoming a luxury that an activity cannot afford in the face of competition.

VI. USE ONE SHOP: IT'S ENOUGH

Typical Practice

Military bases often have two or more housing maintenance shop locations because housing is often dispersed over large areas. One shop generally serves as the central site, while the others are more limited in scope and are considered satellite shops. Satellite shops are stocked with their own parts and supplies, their own sets of shop tools and equipment, and their own staff, usually including a supervisor.

Winners' Actions

After analyzing the cost of operating satellite shops, several winners we visited decided that the added convenience of multiple locations was not cost-justifiable, particularly if one or more supervisory positions could be eliminated through consolidation. The in-house operation at Camp LeJeune, for instance, has achieved efficiencies by closing satellite shops. Before competition, the base operated a central trade shop and several emergency service shops dispersed around the installation. Several satellite shops were closed, but because of the unusually large size of the base, closing all satellite shops could not be justified. At Hill Air Force Base, two shops served housing areas on opposite ends of the base. Despite the 3-mile distance between areas, one of the shops was closed, and the base has been operating satisfactorily with a single shop for the past 5 years.

Since satellite shops are separate operating units requiring the same types of support as the central shop, savings have been realized in several different ways through consolidation. First, merging the satellite work force with the main shop gives managers a broader pool of workers for tasks and can enable the shop to operate with fewer total authorized spaces. Second, a merger can free the satellite foremen of supervisory

responsibilities, allow them to return to workman status, and enable the number of supervisory positions to be reduced with savings for the organization. Third, since supplies no longer need to be stocked in multiple locations, savings can be realized from lower total stockage levels.

One important note: the winners who had consolidated to a single shop also acquired vehicles and radios, increasing their mobility and keeping service levels high.

Recommendation

Consider consolidating shop locations even if existing shops are considerable distance from each other. If closing a shop would reduce the level of service, consider an alternative means of remaining responsive, such as purchasing vehicles and communication equipment (see Action #1).

VII. LET FOREMEN GET THEIR HANDS DIRTY

Typical Practice

Foremen are normally responsible for a range of supervisory, administrative, and personnel tasks and are rarely called upon to perform maintenance direct tasks.

Winners' Actions

Winners work to keep supervision from being a full-time job. At Vance Air Force Base, for example, shop foremen in Civil Engineering have been replaced with "working leaders" who are considered technical supervisors. These leadmen do not concern themselves with performance ratings, employee counseling, and the like, all of which are handled by an individual higher in the organization. The manager at Vance Air Force Base claims that a lot of time spent by other organizations in supervising is not entirely necessary and that a good supervisor can oversee many more employees than the typical military organization allows. That manager believes it is unnecessary to have as many supervisors as are found in a typical Civil Engineering shop. The work leaders at Vance Air Force Base charge much of their time to direct labor and seem quite satisfied that their years of experience in a craft have not resulted in an exclusively supervisory desk job.

Recommendation

Make use of working leaders. Allow foremen to perform direct labor by reassigning primary responsibility for personnel tasks to a supervisor at a higher level.

VIII. DON'T BE AFRAID OF OVERTIME

Typical Practice

Higher management policy often discourages housing maintenance and other base support managers from using overtime on a regular basis. Overtime seems to be reserved for emergency use only, and significant use of overtime is considered a sign of poor management. As a result, housing maintenance managers tend to staff at a higher level so they can handle work load peaks. Activities using military personnel do not feel the same pressure to avoid overtime, but we found that much unpaid overtime of their military is quickly offset by granting compensatory time off.

Winners' Actions

Contract winners told us that they frequently use overtime. They staff for the average work load and satisfy peaks by using paid overtime. In-service competition winners, on the other hand, use less overtime because they still feel external budgetary pressures to avoid it.

Recommendation

Audit your work load and determine whether it has periodic peaks that might indicate that a full-time position is not required. Consider eliminating the position if overtime funding can be budgeted. Solicit support from installation finance and personnel offices in this endeavor; it could increase your productivity dramatically.

APPENDIX C

HOW FUNCTIONS WERE SELECTED

Early in this project, it was necessary to select two Base Operations Support (BOS) functions to examine in detail. We reviewed the Commercial Activities (CA) Inventory that the Department of Defense (DoD) is required to maintain by Office of Management and Budget (OMB) Circular A-76¹ and ranked BOS functions in order of the number of positions not yet subjected to an A-76 cost comparison (see Figure C-1). Our rationale was that functions with a large number of activities that had not yet been competed under the CA program would benefit most from the findings of the study. We then examined the DoD data base of CA cost comparison study results and eliminated the following functions.

- those functions for which the cumulative in-house man-year bid was not lower than the man-year strength before competition, i.e., functions that did not produce savings of positions during in-house efficiency review;
- those that were not consistently defined across Services; for example: studies in the T801 category ranged from packaging and preservation to warehousing operation and precision instrument calibration - we could not be assured that a visit to a winning activity would produce findings applicable to all other activities in that category;
- those with a low number of CA cost comparisons (we arbitrarily set the minimum at ten comparisons): since we were interested in identifying functions that consistently produced savings, it was important that sufficient cost comparison experience be available;
- those that were primarily single-Service in nature - in intermediate aircraft maintenance, for example, all but 3 of the 36 cost comparisons in the data base were from Air Force installations.

¹U.S. Department of Defense, "Operation of Commercial and Industrial-Type Activities," DoD Instruction 4100.33, February 25, 1980.

FIGURE C-1. BOS FUNCTIONS WITH LARGE NUMBER OF UNSTUDIED POSITIONS

A-76 STATISTICS

CODE	DESCRIPTION	ARMY			NAVY			MARINES			WRAV			WE WILL STUDY & REPORT	WE REPORT ONLY	2 NET SAVINGS	
		MAN YEARS	TOT #	GOVT WINS	MAN YEARS	TOT #	GOVT WINS	MAN YEARS	TOT #	GOVT WINS	MAN YEARS	TOT #	GOVT WINS			ALL STUDIES	GOVT WINS ONLY
2901	Supply/Warehouse/WHL	100	7	4	147	10	6	—	—	—	1944	6	2	8227	804	19.1	17
2972	Buildings/Structures (Non MW)	—	—	—	70	6	2	111	1	1	32	5	5	8102	121	22.1	22
8724	Guard Services	606	15	7	311	16	7	—	—	—	—	—	—	4515	2029	9.1	9
2907	Audiovisual Services	140	3	2	30	7	7	—	—	—	605	22	6	4069	2517	24.7	25
9718	Fire Protection/Prevention	127	3	3	301	9	9	—	—	—	—	—	—	4067	446	8.8	9
9810	Admin. Support Services	—	—	—	2	2	2	—	—	—	274	11	5	3022	1292	22.5	11
2991	Family Housing Maintenance	—	—	—	36	3	1	176	5	3	1418	60	16	1319	303	4.3	12
3507	Maintenance of Elec. & Comm.	49	3	3	—	—	—	—	—	—	112	1	1	1097	702	30.1	30
3501	Intermediate Aircraft Maintenance	134	3	6	—	—	—	—	—	—	423	33	9	945	128	-6.1	22
9729	Air Conditioning & Refrigeration	—	—	—	103	6	4	—	—	—	—	—	—	803	18	-95.1	-124
9723	Electrical Plants & Systems	7	1	1	—	—	—	—	—	—	15	1	0	741	30	27.3	-43
2917	Other Comm. & Electronics	—	—	—	13	1	0	—	—	—	267	1	0	725	711	13.6	0
9708	Laundry/Dry Cleaning	875	26	6	1	1	1	—	—	—	106	4	1	706	40	-51.4	-21
2906	Printing & Reproduction	—	—	—	—	—	—	—	—	—	9	2	1	595	219	22.2	20
2905	Bulk Liquid Storage Ops.	—	—	—	63	6	1	—	—	—	35	1	0	506	63	-10.0	0
9730	Other Spec. & Utilities (Misc)	376	3	2	—	—	—	—	—	—	63	1	1	537	60	-1.6	10
9706	Installation Bus Services	23	3	2	40	3	4	—	—	—	37	7	3	437	125	13.7	23

- those in which less than 10 percent of all winners were in-Service organizations - since we wanted to find ideas that could be applied to in-house activities, it was important that we visit at least some in-house winners; if the vast majority of competitions were won by private contractors, we could not be assured of such an opportunity.

After the eliminations, the five top remaining functions were:

- Building/Structures Maintenance (Non-Family Housing);
- Guard Services;
- Audiovisual Services;
- Fire Protection/Prevention;
- Family Housing Maintenance.

After discussions with the Services and the Office of the Secretary of Defense (OSD), we decided to eliminate Guard Services and Fire Protection/Prevention since the Services had been asked by OSD to review those functions themselves. Building/Structures Maintenance was eliminated in favor of Family Housing Maintenance, which is similar but far more easily compared across Services.

The remaining functions, Audiovisual Services and Family Housing Maintenance, were selected for detailed study.

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Contract competitions in Base Operations Support have produced savings averaging 27% whether a contractor or the in-house work force wins. We visited eleven activities that had won competitions in the Audiovisual and Family Housing Maintenance fields. The study identifies approaches taken by competi- tion winners to make their operations more productive and to reduce their cost of operations. The report includes recommendations to OSD and the Services on how to promote similar actions in noncompeted activities and Audiovisual and		

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Family Housing Handbooks to be distributed to managers in those fields.

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